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Collapse Therapy in Tuberculosis.—Pneumothorax offers a great boon in pulmonary tuberculosis, especially if the disease is solely or predominantly unilateral. Cavities may not be collapsible, however, and cause a continuation of tubercle bacilli in the sputum which always renders the eventual outlook potentially grave. The pneumolysis procedure of Jacobaeus very commonly is of the greatest value in allowing the collapse to become complete, as is also phrenicotomy and thoracoplasty. Destruction of the phrenic nerve by squeezing was done on 40 cases, in which from 12 to 30 cm. of the nerve was flattened. Two days following the operation the diaphragm became immobile and in high position and within a week it showed paradoxical movement. The operation is usually irreparable unless the nerve be traumatized in a comparatively short segment. Ordinarily the temperature falls, sputum decreases in amount, and evidence of decrease of inflammation appears. But, if favorable results are to be forthcoming, the operation must be one of permanent and not transient nature. At times complications, such as haemoptysis, follow the operation. On the other hand, effusion in pneumothorax appears less frequently when there has been a phrenicotomy than when this has not been done. Phrenicotomy without pneumothorax does but little good, particularly if there is a cavity in the upper lobe. In collapse therapy, it is much better to begin with simple pneumothorax and resort to phrenicotomy only as a recourse (without any great assurance of success). This may be followed by thoracoplasty, which is a serious procedure but, in competent hands, may restore the patient's health. The latter operation should never be done when there is any disease on the contralateral side. The appearance of disease in the contralateral lung after thoracoplasty or other collapse procedure not infrequently occurs. In this extremity bilateral pneumothorax, even with all its dangers, may be tried. It sometimes yields very gratifying results. When refills are made alternately on the two sides, the immediate danger is less than when bilateral refills are made simultaneously. In bilateral pneumothorax there is some tendency to early development of exudate. This with the possibility of a spontaneous pneumothorax causes one to avoid simultaneous refills. Oleothorax has also had considerable vogue in the last few years. In this, sterilized liquid (petrolatum or 0.5 per cent gomenol) is injected, particularly where thick-walled cavities are resistant to air pressure. It is not very dangerous, even in the presence of empyema. The introduction of iodide products with the oil does not produce any favorable results. It irritates the pleura. In thickened pleurae it is not absorbed. The permanent effect of oleothorax is not known. It may sometimes be used as a substitute for thoracoplasty.—*Fortschritte der Kollapsbehandlung der Lungentuberku-*

lose, H. Scholz, Deutsche med. Wchnschr., March 22 and 29, 1929, lv, 486 and 533.—(H. S. W.)

Thoracic Surgery.—Modern principles in the treatment of acute empyema were clearly stated by Hippocrates. He advised cleanliness with no drainage until the fifteenth day, used irrigation, and recognized the necessity of keeping the wound open until the infection had subsided. From that time until the notable work of the Empyema Commission created in America as a result of the heavy mortality from haemolytic-streptococcus infection in military camps during the winter of 1917–1918, the treatment of empyema formed a lamentable chapter in the history of medicine and surgery. For many years repeated aspiration was the operation of choice. In 1872 Bouchut reported a case in which the chest was punctured 122 times in eleven months. Graham, a member of the commission mentioned above, pointed out the differences between empyema due to the streptococcus and that due to the pneumococcus. The variety due to the latter microörganism develops late and is soon walled off, while that due to the former appears early, generally requires two to three weeks for the development of frank pus and localizing adhesions, and necessitates several aspirations to relieve symptoms during that time. Streptococcal empyema should not be regarded as an acute surgical emergency requiring operation as soon as recognized, but in pneumococcal cases early operation is permissible, and even advisable, for if too long delay occurs there will be thick, flaky masses in the exudate on both the parietal and visceral pleurae. As a result of these recommendations the mortality from empyema fell from a rate varying between 30 and 84 per cent to 4.3 per cent. The methods of treating empyema are enumerated and discussed. Briefly, they comprise (1) aspiration, which may be repeated or continuous, (2) drainage by closed methods (thoracotomy through an interspace or with rib-resection), and (3) drainage by open methods. Bilateral, interlobar, apical, mesial and localized diaphragmatic forms of empyema are discussed. In considering chronic empyema the causes are given as follows: (1) too early opening in streptococcal cases, (2) delayed opening, (3) ineffective drainage, (4) entrance of foreign bodies, (5) formation of a bony ring around the drainage-tube, (6) pocketing, and (7) bronchopleural fistula. A survey of the operative procedures in the treatment of this condition includes the methods of Estlander (who in 1879 introduced the thoracoplastic operation which has since borne his name), Schede, Delorme, Fowler, Ransohoff and Keller. Tuberculous empyema is a term applied to several conditions: *1:* A serous, tuberculous effusion that becomes chronic and eventually purulent. *2:* An effusion that develops during the course of artificial pneumothorax and becomes purulent. *3:* Pyopneumothorax from lung puncture, rupture of adhesions (especially if positive pressures have been used), spontaneous rupture of a subpleural focus of caseation or of a cavity, or from rupture of a pyopneumothorax through the visceral pleura into a bronchus. The added risk of secondary infection is particularly serious in the last two conditions, and the outlook is extremely grave. Because of the notably high mortality in cases in which purulent effusion occurs, Burrell recommends washings with 1 in 5000 methylene-blue solution and aspirations to try to get the lung to expand. If the pus is too thick to aspirate he introduces 20 cc. of Gauvain's modifying fluid (guaiacol 2 gm., creosote 2 gm., iodoform 5 gm., ether 10 gm., sterile olive oil 100 cc.) and after twenty-four hours the fluid can generally be aspirated easily. If there is no reëxpansion, thoracoplasty is advised. The same procedure is carried out for spontaneous pneumothorax when pus forms. Another form of treatment is by oleothorax, the injection of 400 to 600 cc. of sterile olive oil or liquid paraffine to which oil of gomenol is added in strengths of 5 to 20 per cent, with simultaneous withdrawal of air, fluid or pus. The introduction of oil into the pleural cavity was first employed by Weill in 1918 for pyothorax. Oleothorax has also been recommended (1) to obviate frequent refills in artificial-pneumothorax treatment, (2) to limit or prevent adhesions, and (3) to delay the progress of obliterative pneumothorax. *Haemothorax* and wounds of the pleura and lungs are discussed. *Tumors of the pleura* may be simple, such as lipoma, fibroma and perhaps enchondroma, or malignant, of which the chief varieties are endothelioma and sarcoma of various kinds. Malignant tumors of the pleura are rarely diagnosed at a stage when operation is practicable. The chief *mediastinal conditions* requiring the surgeon's aid are (1) suppurative mediastinitis, resulting from trauma, penetrating wounds, extension from disease of the sternum, vertebrae, ribs, lungs, pericardium, pleura or peritoneum, and tuberculous mediastinal lymph nodes; (2) mediastinal tumors and cysts, as goitre, lipoma, chondroma, myoma, fibroma, osteochondroma, ganglioneuroma, sarcoma, dermoid and teratoma; and (3) mediastinal emphysema, resulting from injury to the trachea or bronchi. The superior and anterior

mediastina are readily exposed by splitting the sternum (anterior mediastinotomy), first described by Milton of Cairo in 1897. The posterior mediastinum can be reached by an operation in which ribs are divided and shingled one upon another after certain sections have been removed (Lilienthal's modification of the older operations of Bryant and Enderlen). The mediastinum can also be reached by a transpleural route after thoracotomy.—*A Medical Review of the Surgery of the Chest. Lecture III.—Surgery in Pleural and Mediastinal Conditions, R. A. Young, Lancet, April 20, 1929, ccxvi, 805.*—(*E. H. K.*)

Thoracic Surgery.—It is the opinion of the author that practically every patient with unilateral tuberculosis should be given some form of compression therapy. In those cases in which it seems that either artificial pneumothorax or a phrenic operation may be used with equal benefit, the latter is probably more desirable. Rest is the predominant factor in treatment, and at least a crushing of the nerve should always be done in those lesions not active or extensive enough to warrant pneumothorax therapy, but in which the added rest will give more assurance of their healing. In patients with exudative, rapidly spreading lesions, phrenic operations should not be considered, pneumothorax being preferable; but should the same lesion be seen after the activity subsides and only a soft-walled cavity remain, a crushing may be done. Frequent roentgenological examinations should be made, and if the area shows no evidence of improvement within a reasonable time artificial pneumothorax should be attempted. In uncontrollable haemorrhage, even in bilateral lesions, if pneumothorax is not possible, a crushing or an exairesis should be done on the side where the bleeding occurs. A crushing operation is preferable to exairesis in those cases in which there is a suspicious lesion in the contralateral lung and compression of the diseased lung by pneumothorax is impossible because of pleural adhesions. Crushing is useful before upper-stage thoracoplasty for apical cavities, in the absence of disease in the remainder of the lung, giving temporary compression to the lower lung and added protection against aspiration pneumonia without permanent loss of diaphragm function. In early non-tuberculous lung abscess that is not clearing after a few weeks of bed-rest, postural drainage and bronchoscopy, a crushing should be done to secure added rest and compression. In old chronic lung abscess and bronchiectasis, phrenicectomy should be done before more radical procedures are used. An exairesis is desirable before reëxpansion is permitted in the case of successful pneumothorax therapy in which the lung has been kept down for several years. In basilar tuberculosis startling results are occasionally seen from phrenicectomy; but these lesions must be carefully watched and any spread checked with pneumothorax therapy. Phrenicectomy is a useful adjunct to pneumothorax when lateral or apical adhesions prevent proper collapse of cavities, especially if the base of the lung be adherent at the same time to the diaphragm, for the resulting relaxation often permits further collapse of the lung with pneumothorax. An exairesis is indicated as a preliminary measure to upper-stage thoracoplasty where there are apical cavities and considerable infiltration in the remainder of the lung. In certain cases where lateral or apical adhesions prevent proper collapse of the lung, even after phrenicectomy, because they are too thick to be stretched by repeated refills with air, an intrapleural pneumolysis is desirable. The author prefers the open method to the closed method of Jacobaeus. Probably most of the failures attributed to the open method are due to the fact that the pleura is opened by an incision between the ribs, the pleural space being lost because of inability to suture the pleura properly. To overcome this difficulty the incision should be made down to the rib nearest the adhesion to be cut, and about 6 cm. of it removed subperiosteally. After perfect haemostasis the incision can be made through periosteum and pleura, giving tissue of greater thickness to suture. A small sized Cameron light provides illumination of the pleural cavity during the operation, and a tonsil needle is used to place sutures around the adhesions before severing by means of the cautery.—*Surgery of the Phrenic Nerve and Intrapleural Pneumolysis, E. J. O'Brien, J. Am. M. Ass., February 9, 1929, xcii, 463.*—(*G. L. L.*)

Surgery of Lung.—Trauma to the lung does, in the majority of cases, not require any surgical procedure. If pneumothorax with increasing intrapleural pressure results, suture of the pulmonary pleura may be necessary in order to prevent mediastinal emphysema. Ligature of bleeding vessels must be performed if haemothorax with progressive anaemia occurs. On account of the danger of late haemorrhages, patients should be kept in bed for at least three weeks following the injury. Purulent lesions of the lung may follow the inspiration of small foreign bodies, they may be produced by septic emboli following abortion, they may follow typhoid fever, they may be extensions from infected neighboring structures; but

the majority of all pulmonary abscesses are metapneumonic. Abscesses are frequently hidden behind empyemas. The odor of the sputum permits usually of making the differential diagnosis between abscess and gangrene. Spontaneous healing occurs in some cases when the conditions for natural drainage are good. Under no condition should abscesses be punctured, because empyema will result in the absence of pleural adhesions. Gangrene may be treated with favorable results with salvarsan. The majority of abscesses must be treated surgically. In gangrene early operation is indicated; in abscesses one should wait until the lesion is well demarcated, which requires usually six to eight weeks. After this time, direct drainage should be done. A two-stage operation is necessary in the absence of pleural adhesions. A special form of purulent inflammation is bronchiectasis. Many of the diffuse bilateral lesions are congenital. Others follow chronic retracting processes. In postpneumonic bronchiectasis, extrapleural thoracoplasty yields frequently excellent results. Active surgery is always indicated in echinococcic infection of the lung. In the surgical treatment of pulmonary tuberculosis, the chief object is to obliterate cavities, which may be done by pneumothorax, phrenicectomy, or extrapleural thoracoplasty. Paravertebral resections, according to Sauerbruch's methods, are preferable to the large resections as advocated by Brauer and Friedrich.—*Lungenchirurgie, insbesonders bei Lungeneiterungen, G. Lotheissen, Wien. klin. Wchnschr., October 3, 1929, xlii, 1295.*—(*M. P.*)

Surgery of Oesophagus and Lungs.—For intrathoracic surgery a differential pressure apparatus is necessary. The inexpensive and simple apparatus used in Leyden is described and illustrated. Differential pressure by intratracheal insufflation was first described by Vesalius in 1543. The radical cure of carcinoma of the oesophagus by operation is discussed and hope expressed that with improving technique the operative mortality may be reduced. A condition often mistaken for carcinoma is cardiospasm. A typical X-ray picture of the latter condition shows a dilated oesophagus, the dilatation reaching down to the lower aspect of the diaphragm and being succeeded by a thin shadow, some centimetres in length, before the gastric shadow is reached. The needle-shaped end of the shadow is of great diagnostic importance; it corresponds with the intraäbdominal part of the oesophagus. The rest position of the subdiaphragmatic part of the oesophagus is closure, its function being to open, and the opening muscles are the longitudinal musculature of the abdominal part, continuous with the gastric muscle. In the ptotic type of patient, in whom cardiospasm (so called) is most common, the opening muscles are in a bad state for their work. If the moving force of the upper part can overcome the resistance of the cardiac part the patient has almost no symptoms. In another variety of so called cardiospasm there is a high degree of gastric pneumatosis, but no true spasm. The surgical treatment of bronchiectasis consists of a series of stages of treatment. The condition may be cured at any stage, but each operation lessens the danger of the succeeding one if this is unavoidable. The first is phrenic exairesis, the second a complete thoracoplasty with removal of periosteum and intercostal muscles. The final stage may take the form of either of two procedures: extirpation of the lobe or its slow destruction by burning.—*Surgery of the Esophagus and Lungs, J. H. Zaaijer, Lancet, May 4, 1929, ccxvi, 910.*—(*B. T. McM.*)

Thoracoplasty.—The author emphasizes the importance of determining the function of the heart before performing thoracoplasty. The prognosis of the procedure is better the shorter the period of intoxication. A 4- to 5-year period of disease makes the prognosis less favorable and 10 years of intoxication are the limit of operative risk. In the indications for thoracoplasty too much fear for the healthy side should not exist. A material of 70 operations is reviewed, with a mortality of only 3 cases which were referable to cardiac insufficiency. The author emphasizes the proper evaluation of cases and early operation before toxic changes have affected all the organs.—*Grundsätzliches zur Thorakoplastik, H. Jessen, Zeitschr. f. Tuberk., 1928, lii, 369.*—(*H. J. C.*)

Pleural Complications of Artificial Pneumothorax.—According to Dumarest febrile pleurisies occur in 25 to 30 per cent of the unfavorable cases. It is our duty to get the maximum effect from artificial pneumothorax. It is more and more widely practised, but too often, unfortunately, by the inexperienced or those a little too busy, who forget that the pneumothorax cure is made up of details and niceties, and that failure to observe a rigorous and scrupulous technique may have most unfortunate consequences for the patient. Pleural complications have been particularly noted. Burnand and Rossel made a study of serofibrinous pleurisy in pneumothorax covering nearly five years of observations, 1916–1920. They have found that in the last few years these pleurisies tended to be much less severe.

Parallel tables are shown for 1920 and for 1928, each comprising 50 patients personally followed, the first group at the "Popular Sanatorium" at Leysin, the second for from six months to five years at the Neufchatel Sanatorium. The number of febrile pleurisies was exactly cut in half in the latter group, and the number of considerable exudates reduced from 27 to 12. Only 4 required puncture among the 1928 group, as compared with 20 in 1920. Under the term *febrile pleurisies* were included all with elevation of temperature greater than 37.6°C. Febrile pleurisies in 1920 occurred in 56 per cent, in 1928 in 28 per cent. Fever is not a matter of indifference. Every febrile exacerbation diminishes general resistance and it is not rare to see a bilateralization or a previously latent tuberculous enteritis flare up under such conditions. Again, in a patient at work fever causes prolonged absence from his occupation, and is a source of annoyance and anxiety. Febrile and copious exudates frequently entail the double menace of adhesions and purulent transformation and later that of reactivations. In this study exudates were counted as slight (non-abundant), which never went higher than the level of the diaphragmatic cupola. Dumarest formerly thought that a pleura once infected was very liable to undergo the changes characteristic of a tuberculous exudate, yet of 36 benign pleurisies in the recent series only 3 developed considerable exudate. Rossel's opinion of the indications for aspiration has not changed: that is, every exudate, voluminous or not, which after a period of increase remains stationary for two or three months, with no tendency to spontaneous resorption, should be aspirated. To what are due the less frequent and grave complications, compared with the first series? First, the use of the lowest possible pressure, a point on which all experienced phthisiologists are in accord. But in addition there are two other important precautions. It is striking to note how often a febrile exacerbation coincides with an insufflation. Sticking a needle in the chest in such instances seems like poking a cane into an ant-hill. These reactions may follow every refill, the patient in the interim remaining absolutely afebrile. Curiously enough, by giving a very slow insufflation such reactions can often be reduced or abolished. In patients with a "sensitive pleura" such treatment works like magic. The explanation probably lies in the rapidity with which a lung is obliged to retract, or in the difference between tearing and slowly stretching adhesions. Again, one should be cautious in the presence of slight unexplained rises of temperature. Often these signify an inflammatory state of the pleura, microbic or toxic. If at this time an insufflation is given, one sees a classical picture of pleurisy develop. It should be the rule with every pneumothorax patient, when the temperature begins to oscillate, to suspect a pleural exacerbation, and daily fluoroscopic examinations should be made. Usually some small quantity of fluid will appear in the pleural cul-de-sac. Under such conditions one should abstain from refills and not return to them until the temperature has resumed its former level for at least five or six days. It is indeed true that in recent cases, in which the temperature is unstable, temperature rises may be more difficult to interpret, as one may be dealing with activity in an insufficiently collapsed lung. One cannot, however, eliminate pleurisy as a cause even though no fluid is seen on fluoroscopy. It is better when in doubt to suspend operations six to ten days, as the danger of adhesions occurring within this short time is less than of stirring up a violent pleural reaction. Inopportune refills may not only injure but even menace the life of the patient. Even reëxpansion of the lung, or maintenance of a negative pressure, does not preclude pleurisy, although von Muralt's sign, an intrapleural pressure higher than or as high as the preceding terminal pressure, is very significant when present. The explanation of a low intrapleural pressure in the presence of pleurisy is that the initial hyperaemia of the serosa facilitates absorption. Rossel, in concluding, is convinced that the traumatizing effect of insufflation has been underestimated, especially in febrile pleurisies. Since the practice of slower insufflations, with more careful regard for the temperature, severe pleural complications have become strikingly less. Rossel emphasizes the point that it is individualization and observance of niceties in technique that assure the success of pneumothorax treatment.—*Comment on peut diminuer la gravité des complications pleurales du pneumothorax artificiel, G. Rossel, Rev. d. l. Tuberc., December, 1928, ix, 909.*—(*A. P.*)

Effusions in Artificial Pneumothorax.—A case is reported in elucidation of exudate formation during pneumothorax treatment. In the case described there occurred a serous exudation in the pleura following every introduction of nitrogen, and in the interval there was a marked diminution as the result of resorption. Since the nitrogen resorption was only slight, bimonthly intervals between fillings were possible and in this time the exudate would completely resorb. The conclusion is drawn that in this case the tutocain anaesthesia

was responsible for an anaphylaxis of the pleura which occasioned the exudate formation.—*Kasuistischer Beitrag zur Frage der Entstehung der exsudativen Pleuritis bei der Pneumothoraxtherapie, R. Menzel, Beitr. z. Klin. d. Tuberk., 1928, lxix, 488.*—(*H. J. C.*)

Treatment of Exudates of Artificial Pneumothorax.—The one used goes under the name of *Neptal*, preparation 440-B of Poulenc. Fifteen cases were treated, with injections at two or three days' intervals. Results were as follows: *A: Injection without Preliminary Puncture: 1: Exudates in Active Evolution:* There was no discernible effect, the exudates continuing to increase (5 cases). *2: Older Stationary Exudates:* 7 cases, purulent in 3. No tendency to resorption was noted after administration of the diuretic. *B: Diuretic Injections Following Puncture:* 4 cases. In two of recent appearance there was no effect. In the other two, after a second puncture and injection, there was no further reformation. The effects of the diuretic, apart from the puncture, are difficult to estimate. In at least one patient the medicament may have been of service, since prior to its administration bimonthly punctures had been necessary. *Accessory Effects:* No appreciable pulmonary reactions occurred. Several patients had transitory nausea and vomiting, usually after the second injection. The occurrence of these phenomena in patients already low in weight has led to the abandonment of the method in those in poor general condition who suddenly develop an exudate, with the usual symptoms of "crisis." *Conclusions:* Injection of mercurial diuretics seems of little benefit in the treatment of artificial-pneumothorax exudates, neither checking those in formation nor provoking spontaneous resorption of old stationary exudates. Practised after evacuation of these by puncture it may enable one to space the punctures further apart or to avoid them altogether.—*Essai de traitement des épanchements du pneumothorax thérapeutique par un diurétique mercuriel, E. Olbrechts, Rev. Belge d. l. Tuberc., July–August, 1928, xix, 171.*—(*A. P.*)

Pneumothorax or Transfusion for Haemoptysis.—Falloise and Olbrechts in a recent paper report certain cases, concluding: *1:* That pneumothorax is a very good means of checking grave or recurrent haemoptysis. *2:* That, however, it does not work in certain cases. *3:* That even pneumothorax may be the cause of serious haemorrhages. Its indications have been well given by Kindberg in his recent book. However, if the patient is profoundly anaemic, tired, and with diminished resistance, Misson hesitates to apply it and prefers blood transfusion, which is easier to perform, less fatiguing and definitely haemostatic. If this does not check the bleeding pneumothorax is resorted to. Three cases are cited in which the patient responded excellently to transfusions of 300 to 400 cc. of citrated blood and he does not believe pneumothorax would have caused such marked improvement.—*Pneumothorax ou transfusion dans les hémoptysies, Misson, Rev. Belge d. l. Tuberc., July–August, 1928, xix, 169.*—(*A. P.*)

Temperature of Gas in Artificial Pneumothorax.—The temperature of the gas used for artificial pneumothorax is considered of importance by the author. The room-temperature gas is considered to be slightly more irritating to the pleura than that introduced at body temperature. The author presents an electrical apparatus which warms the gas to 40° and also controls this temperature during introduction. Reactions are less frequent and of milder and shorter duration when they do occur.—*Zur Frage nach der Wirkung, welche die Temperatur des bei dem künstlichen Pneumothorax in den Pleuraraum eingeführten Gases hat. Ein Apparat zur Erwärmung des bei künstlichem Pneumothorax enzuführenden Gases, A. J. Berlin, Beitr. z. Klin. d. Tuberk., 1928 lxx, 685.*—(*H. J. C.*)

Oleothorax.—Bernou's work on oleothorax provoked such favorable comment that the measure was widely practised and with its increasing use the incidence of its failure mounted. The cause of many failures was asking unduly of it and faulty technique. The efficacy of this treatment in cases of purulent hydropneumothorax, either tuberculous or secondarily infected, is generally admitted. It has been most adversely criticized as being a causative agent in pleuropulmonary perforations. Küss and Bernou advocate high-pressure oleothorax, but there is evidence that it is of doubtful value and may be quite dangerous. Pneumothorax does not act by compression alone; its chief object is to favor spontaneous retraction of the diseased parenchyma. Elaborate techniques in administering oleothorax are decried and a simple one advocated. A small amount of the oil is first given to determine the patient's tolerance for it. If there is no untoward reaction, 200 cc. are then given. This dose is never exceeded and subsequent refills are usually 100 cc. Because of its incompressibility oleothorax even in neutral pressure exerts more compression and stays at a more

constant pressure than pneumothorax. Hence it is more effective than pneumothorax because it favors pleuropulmonary retraction. One case is reported in which, during a period of a year, pneumothorax was inefficient in collapsing the lung, but oleothorax in neutral pressure brought about the desired result in five months. A case is cited in which progressive symphysis of the pleura, taking place in spite of repeated refills of air, was arrested by oleothorax. In such cases the oil is used for blockage rather than compression. Suppression or compression oleothorax is not only apt to cause perforation, but it also gives rise to pain, dyspnoea, by displacing the mediastinum, digestive troubles, anorexia, and loss of weight. A dangerous feature is involuntary compression caused by the development of a pleural exudate under the oil. In cases of spontaneous pneumothorax where the rent in the lung is small oleothorax in neutral pressure may fill up the rent and bring about healing. Where the opening is large, thoracoplasty is the proper measure and oleothorax is contraindicated. Favorable results have been reported resulting from a combination of phrenicectomy and oleothorax, but this is a bad combination, as the weight of the oil and its incompressibility hinder the ascent of the diaphragm. *Conclusions:* Oleothorax is no more free from danger than any other method of collapse therapy when it is used to bring about active compression. The permanence of the tension which the oil confers and its incompressibility are sufficient in neutral pressure to favor spontaneous pleuropulmonary retraction in cases in which gaseous collapse, essentially elastic compression, shows itself inoperable. It is claimed that oleothorax in neutral pressure is efficacious in obliterating a cavity or a midlung lesion which resists compression by air, and that it is equally valuable in preventing progressive pleural symphysis supervening in the course of a pneumothorax. Besides, it is useful as a disinfectant in purulent pleural exudates complicating pneumothorax. When these exudates are the result of pleural fissuration, oleothorax maintained in neutral or negative pressure dries the pleura and facilitates its cicatrization. But, if a large perforation exists with an extensive and active pulmonary lesion, oleothorax must immediately give place to thoracoplasty. When in the course of an oleothorax the patient complains of tasting the gomenol, or if he expectorates the oil, it is important to withdraw the oil immediately and cause decompression in order to avoid enlarging the pleural rent. When the rent is of small calibre and the subjacent lung well collapsed over a long period of time and apparently healed, oleothorax maintained in negative pressure can favor the obliteration of the fistula by drying up and cicatrization of the pleura, thus eliminating the need of thoracoplasty. It is affirmed that in any case oleothorax must not be envisaged as a strongly compressive agent. Forcing oleothorax is flying in the face of disaster and abusing a method which, properly carried out, is excellent. Oleothorax, in neutral pressure, as it should be done and maintained, presents a minimum of danger. Furthermore, it is capable of an extremely favorable action in cases where gaseous collapse is ineffectual. Because of this fact an important place must be preserved for it among the methods of collapse therapy, provided more is not demanded of it than it can give.—*À propos de l'oléothorax, J. Torin and F. Bouessée, Ann. d. Méd., April, 1929, xxv, 330.*—(*B. T. McM.*)

Oleothorax.—In 1922 Bernou introduced this therapeutic measure and his later publications have attracted attention, together with considerable criticism and resistance. Most of the failures or poor results, which are undeniable, are due to preëxisting circumstances for which the method is in no way responsible. One of the clearest indications is (A) aggravation, under the influence of a pleural exudate, of tuberculosis with cavity treated by artificial pneumothorax. The toxi-infectious phenomena, together with the obstacles to cavity compression, lead one to create an oleothorax. In many cases the immediate result is excellent, but after more or less of an interval the temperature curve again rises, and symptoms of cavity suppuration return in spite of increased pressure of the oil and frequency of injection. The real causes for this lie in important transformations produced in the visceral and parietal pleurae during the prolonged evolution of the exudate. Oleothorax will not suppress the dangers due to an invincible refractile tendency of a tuberculized pleura and will not then prevent opening up of a cavity or cavities. However, time has been gained and the general condition ameliorated, which advantages are not negligible. The opportune moment to intervene should be sought with the idea of preventing bacillary exudates from remaining permanently in the pleura, because they perpetuate a chronic pleurisy with thickening and tuberculization of the pleura. A definite contraindication to oleothorax is (B) pulmonary perforation allowing oil to escape into the bronchi. Even a minute perforation is dangerous and there is always risk of increasing it by increasing the oil pressure in the pleura. However, in cases

consecutive to tuberculous pleurisy and evolution of small cortical caseous areas, it is important not to let the pleura macerate in a richly bacillary liquid. Here one feels that earlier employment of oleothorax might have prevented the development of such lesions. *Cases Suitable for Oleothorax: 1: Progressively Obliterative Symphyses Complicating Artificial Pneumothorax:* Doubtless these may be combatted by increasing gas pressures, but this can only be done in a sanatorium and is less effective than oleothorax, as the gas pressures rapidly fall, even in thickened pleurae, and must be frequently renewed, while the pressure of oil is more stable and permanent. The oil has also the advantage of being antiseptic. It is quite unreasonable to expect oleothorax to prevent an imminent pleural symphysis, but it can keep apart separated surfaces better than pneumothorax, hence the term used by Bernou, "oily blockage of the pleura." Bernou, however, was strongly opposed to the use of pressure, believing that it favored fistulization. Küss, on the other hand, has since 1923 employed and advocated the use of pressures even up to 35 cm. of oil, to prevent or check progressive pleural symphysis. The incompressibility of oil is a great advantage over air or gas; it is, however, absorbable even in the case of pure paraffine, and more so in the case of olive oil, especially when under pressure. *2: Cases of Pneumothorax with Unsatisfactory Collapse of Lesions, Especially Cavities:* Most of these are favorably influenced by strongly compressive oleothorax, which exerts a relatively permanent and stable pressure as compared with gas. Two cases in point are cited, with diagrams. *3: Cases of Ineffective Pneumothorax due to Lax Mediastinum:* Most of these respond well to slightly positive oleothorax. It may be thought that any oleothorax must exert a positive pressure, due to its weight, but this is not so, because the "elastic tension" of the lung enters into the determination of the "pleural space," and the quantity of liquid may be insufficient to overcome this elastic traction, in which case we have a low or negative pressure oleothorax. An oleothorax, even with pure paraffine, promotes a certain amount of pleural thickening which is of advantage in these cases, and this effect is enhanced by adding gomenol or eucalyptol. It must be remembered that in beginning treatment a small quantity of gomenolated paraffine may be irritant and cause a painful pleural reaction, hence it is better to begin with pure paraffine. Low-pressure oleothorax has also been successfully used on bronchiectasis, after the failure of ordinary pneumothorax, and one such case, previously of long standing, is reported. *4: Pleurisies of Artificial Pneumothorax: Recurrent Bacillary Pleurisies:* Many exudates, if nonbacillary, may be successfully treated by Potain's method; but if they tend to reappear rapidly after one or two air replacements, especially if accompanied by persistent fever or other unfavorable symptoms, or if they become purulent and increasingly bacillary, a disinfecting oleothorax is indicated. The lung should not be allowed to macerate in bacillary pus, which favors softening of cortical tubercles and pulmonary perforation, or else a lardaceous transformation of the parietal pleura. This "oily blockage of the pleural cavity" is the best method to assure prolonged compression, slowly diminishing, of cicatrizing lesions, and at the same time to exert an antiseptic effect without causing harm. *5: Secondarily Infected Bacillary Pleurisies:* The gravity of secondary infection complicating tuberculous bacillary exudates is well known, yet pleurotomy and thoracoplasty should be avoided if possible. Remarkable results with antiseptic oleothorax have been obtained in serious cases by Bernou, Burnand, Bezançon, Rossel and others. However, a rigorous technique is essential, and before introducing the oil the pleura must be completely emptied of infected liquid and rinsed with lukewarm serum. The same procedure should be repeated as often as necessary. *6: Pulmonary Perforations Followed by Fistulae:* In the course of artificial pneumothorax transitory incidents, sometimes very sudden and dramatic, may be attributable to small pulmonary perforations (acute pains, agonizing dyspnoea, etc.). Permanent fistulae, however, are practically always accompanied by formation of more or less purulent fluid. It was in this type of case that Bernou first created oleothorax, and fortunately with success. He himself recognized that the fistula must be of small size, otherwise the situation would be aggravated by incessant expectoration of gomenolated oil. Indeed, sometimes in an otherwise satisfactory oleothorax, there may be intermittent discharge of oil through the bronchial passages. This renders the prognosis uncertain and thoracoplasty must be contemplated. *Technique:* The creation and maintenance of oleothorax are incontestably more difficult than pneumothorax insufflations. One has to deal with a viscid liquid introduced under rather strong pressure through needles of relatively small diameter, into a pleural cavity whose tolerance is unknown. The X-ray furnishes much less information as to the status of things than with pneumothorax, due to the opacity of the oil. Although most prac-

titioners use sterilized vegetable oils, with gomenol added, Küss prefers paraffine. It is more readily sterilized, of more reliable quality, and keeps indefinitely, besides being almost unaltered within the pleura. Two hours in the oven at 150°C. is sufficient. It then takes up easily 4 to 8 per cent of gomenol-eucalyptol, 2 parts to 1. It is injected at 38°C. Needles should be of just the necessary length and the largest acceptable internal diameter to facilitate the flow, but on the other hand they must not be too coarse because of the reflux tendency. Küss employs a small trocar of 1.5 mm. external and 1 mm. internal diameter; with rare exceptions that is sufficient to evacuate pleural pus. In cases where grumous particles tend to block the cannula the anterior wall of the chest is punctured with the patient horizontal by a long trocar of 2 mm. external diameter. For oil injection without aspiration Küss uses needles of 1 to 1.2 mm. external diameter and 0.7 to 0.9 mm. internal. These are less traumatizing but the flow is slower. For the initial injections he uses a 50-cc. syringe with a weighed disk plunger, which fits tightly at atmospheric or higher pressures, attached to a terminal adapter with a stopcock control and a lateral arm for aspiration of fresh oil. The injecting tube is 8 mm. external diameter and 3 mm. internal, and 36 cm. long. In measuring pressures, one may merely observe the reflux of oil into the tubing, but it is more precise to follow its movement in a glass tube or manometer of small diameter (3 mm.) which is also sensitive to negative pressure. The pressures used vary from a few cm. to 70 cm. For copious injections, Küss uses glass ampule-cylinders of 300 to 700 cc. content, graduated in 25 cc. divisions, fixed on a vertical support. A horizontal upper tubular connection receives a vacuum tube, in communication with a 2-liter bottle to which a Potain suction pump may be attached. A lower vertical tubular connection leads to the pneumothorax apparatus. Several ampules may be kept in readiness, containing different strengths and kinds of oils but a 4 per cent gomenolated paraffine serves most indications. In injecting the oil one must be sure to keep the end of the needle in the oil; to be sure, one aspirates a little before each injection. The physician should know, in each case, the exact thickness of the chest-wall and choose a needle 2 mm. longer; this can be judged by watching the manometer during introduction of the needle. In pneumothorax cases one always employs two needles, one of small calibre to aspirate the pneumothorax as the oil enters the other. In replacement of exudates either one or two needles may be used; if the mediastinum is displaced the exudate should first be replaced by air and then by oil. Diagrams accompany the paper.—*Rapport sur l'oléothorax, M. G. Küss, Section d'études scientifiques de l'Oeuvre de la Tuberculose, June 9, 1928, reported in Rev. d. l. Tuberc., October 1928, ix, 714.*—(*A. P.*)

Results of Oleothorax.—This series of cases was gathered from the practices of Tobé, Bernou, Cardis and Gilbert of Leysin, and a number observed by Fontaine on Rist's service. All indications were represented: purulent and grave serofibrinous pleurisies, perforations, adhesions, compressions, and as a substitute for pneumothorax in difficult cases. The results were classified as (1) effective, (2) ineffective, and (3) dead. They were considered effective when the symptoms disappeared following treatment and the general state improved, and ineffective when the course of the disease was not modified. The mortality group comprised both those in whom oleothorax was inoperative or even aggravated the condition, and those who died of some complication apart from the treatment. *1: Oily Blockage in Severe Purulent Pleurisies* (32 cases): Of these 15 were effective, 2 ineffective and 15 died, 5 of intercurrent complications. *2: Secondarily Infected Purulent Pleurisies* (2 cases): Both effective. *3: Disinfection and Oily Blockage After Pleuropulmonary Perforation* (12 cases): Of these 8 were effective, including 2 that later died of remote causes (intestinal obstruction, bilateralization of lesions) and 4 were unsuccessful. *4: Compressive Blockage to Complete Ineffective Pneumothorax* (9 cases): Of these, 7 were effective, although in 2 bacillary sputum persisted, 1 was ineffective and 1 died of progressive disease. *5: Blockage to Limit Progressive Adhesions and Maintain Compression* (39 cases): Of these, 26 were effective, although 2 later developed bilateralizations and 2 continued to have bacillary sputum, while 3 were very recently begun. Four cases were ineffective, two of whom benefited by phrenicectomy. Nine patients died, 5 due to complications attributable to oleothorax; however, they were all gravely ill. *6: Blockage to Suppress Pneumothorax Reactions* (3 cases): All effective. *7: Blockage to Eliminate Frequent Refills* (2 cases): Of these one was effective, the other died. *Discussion:* For purulent pleurisies and perforations combined, there were 23 successes out of 40 treated, or over 50 per cent. While "cold" purulent pleurises and small perforations may cure spontaneously, it is none the less advisable to subject every case of chronic pleurisy which assumes a malignant character and every persistent

perforation to oleothorax. Even those that later need thoracoplasty are benefited; also oleothorax helps to prevent adhesions following subsidence of the pleurisy. Of course large pulmonary perforations and deep-seated suppurations are not affected. An oleothorax once induced must be followed like a pneumothorax, with regular measurement of the pressures. After a few months usually a few cubic centimetres of oil every two or three months are enough to balance that lost by resorption. Bernou's metallic manometer is a useful instrument.—*Résultat de cent oléothorax, J. Fontaine, Section d'études scientifiques de l'Oeuvre de la Tuberculose, June 9, 1928, reported in Rev. d. l. Tuberc., October, 1928, ix, 769.*—(*A. P.*)

Bilateral Artificial Pneumothorax.—Bilateral pneumothorax was used in 46 cases with good results, the more so the less extensive the tuberculous process in the lung. The most favorable cases are those of bilateral subcompensative second-stage Turban-Gerhardt lesions. The presence of cavities results in a less favorable effect. Cases with mixed productive-exudative forms of tuberculosis and with definite widespread cirrhotic changes are less suited for this type of therapy. Pneumothorax pressures are to be maintained negative in most cases.—*Über die Anwendung des doppelseitigen künstlichen Pneumothorax bei tuberkulösen Kranken, W. Rawic-Scerbo, Beitr. z. Klin. d. Tuberk., 1928, lxix, 714.*—(*H. J. C.*)

Bilateral Artificial Pneumothorax.—Bilateral pneumothorax was induced in 51 cases. In 6 of them it was done subsequently and in 45 coincidently, with the result that 13 times there was a definite improvement, 17 an improvement, 10 times no improvement, and in 11 a harmful effect was noted. The results with subsequent bilateral pneumothorax were better than with the coincident. The subsequent pneumothorax resulted in an effort to treat a progression on the contralateral side in the majority of cases. Spontaneous pneumothorax occurred in 6 per cent of the cases of bilateral pneumothorax. It is believed that continued roentgen control is essential in both bilateral and monolateral pneumothorax in order to determine the necessity for the second introduction of air.—*Die Rolle des bilateralen Pneumothorax in der Therapie der Lungentuberkulose, J. A. Kerzmann, Beitr. z. Klin. d. Tuberk., 1928, lxix, 330.*—(*H. J. C.*)

Spontaneous after Artificial Pneumothorax—The author reports 4 cases of spontaneous pneumothorax occurring after artificial pneumothorax. In all cases symptoms occurred coincident with the initiation of the spontaneous pneumothorax and their duration was short, which was attributed to the presence of the collapse attained. Two causes for the origin of the condition are cited, either a spontaneous tear of the pulmonary parenchyma or an injury to the lung by the needle used for instituting the artificial pneumothorax.—*Spontanpneumothorax im Anschluss an die Erstpunktion, G. Cicconardi, Beitr. z. Klin. d. Tuberk., 1928, lxx, 497.*—(*H. J. C.*)

Air Embolism in Artificial Pneumothorax.—Air embolism was observed in 12 of 890 patients given pneumothorax and in a total of 13,935 refills. The emboli originate if the end of a needle enters a pulmonary vessel, which mechanism is of importance in primary pneumothorax and almost always is fatal. Another origin is dependent upon the entrance of the needle into an adhesion and the air entering under pressure a vessel in the torn band, and in these cases the symptoms are usually not severe and recovery is common.—*Über die Luftembolie beim künstlichen Pneumothorax, M. Borock and D. Wildre, Beitr. z. Klin. d. Tuberk., 1928, lxix, 324.*—(*H. J. C.*)

Bilateral Artificial Pneumothorax and Phrenicotomy.—In treatment of pulmonary tuberculosis by bilateral pneumothorax, it is of the greatest importance that the patient be kept at absolute rest for a considerable time. The patient should always be treated in a sanatorium and, in general, should be kept in bed for a year before he is allowed to sit up or to take short walks. Five hundred cubic centimetres of air may be introduced and maintained on each side without discomfort, but a positive pressure should not be maintained. Vital-capacity estimation is not necessary to determine the amount of air to be added. Of more importance in this respect are the manometric readings and symptoms of the patient. Indications are: *1:* Development of progressive disease on the contralateral side in cases of unilateral pneumothorax, especially if the course is distinctly down-hill. Formerly the tendency was to discontinue the pneumothorax on the first side. *2:* Cases with bilateral tuberculosis, in which the non-diseased side is put down and kept at a pressure of not more than minus three in expiration. In these, small amounts of air are then (three or four weeks after collapse of one side) introduced into the second side. Unless this be done by degrees and with care there sometimes develops spontaneous pneumothorax. Both sides should not be refilled at the same time. Tuberculous pneumonia

is not suitable for this type of treatment. It is possible that the burning of adhesions à la Jacobaeus may be carried out safely in bilateral pneumothorax. Bilateral pneumothorax is sometimes impossible. In such cases one may perform a phrenicotomy on the side in which the pneumothorax could not be completed because of adhesions. No embarrassment to breathing follows such bilateral procedures. Bilateral phrenicotomy is possible in patients needing bilateral pneumothorax but in whom adhesions prevent the accomplishment of the latter. One such case is reported. In this patient phrenicotomy was done on one side four years ago and on the second side two and one-half years later when the disease developed and pneumothorax was not successful. No change in breathing occurred at the time of the second operation. Chemical analysis at the time showed no change in respiratory function. A subjective improvement occurred but this may have been accidental. One case is insufficient for deductions, but it may show possibilities.—*Zur Behandlung der doppelseitigen Lungentuberkulose mit Pneumothorax und Phrenikoexairese, L. Dünner und Heilborn, Deutsche med. Wchnschr., January 18, 1929, lv, 98.—(H. S. W.)*

Pleural Pressure after Phrenicectomy.—It is frequently observed that following phrenicectomy the normal marked respiratory fluctuations in the pleural space are considerably reduced. This is particularly the case if phrenicectomy had been done a sufficiently long time before, so that the diaphragm has undergone atrophy, and if a pleural effusion exists. One case was observed, in which the elevation of the diaphragm was so excessive that a pneumoperitoneum was induced, although puncture was performed in the third intercostal space.—*Ueber die Manometerablesung bei mit Phrenikoexairese kombiniertem künstlichem Pneumothorax, H. Maendl, Wien. klin. Wchnschr., September 26, 1929, xlii, 1261.—(M. P.)*

Phrenicoexairesis.—The importance of phrenicoexairesis in the therapy of tuberculosis is still disputed by some. While the Sauerbruch school considers this operation as satisfactory in itself in certain cases, the number of sanatorium physicians opposing it is increasing. The authors review the anatomy and physiology of the phrenic nerve, the operative technique and the possibility of complications. They also review the indications in 100 cases with cavities. The observations cover a period of from 1 to 7 years. Of these 100 cases 91 per cent are still alive, while 4 per cent have died, and of those alive almost 60 per cent are able to work. Among the operated women a number have married and have been carried through pregnancy without harm. These figures are compared with those of Bacmeister, obtained on nonoperative cavity cases, in which ordinary sanatorium treatment showed a mortality attaining 80 per cent.—*Unsere Erfahrungen bei 100 Phrenicoexairesen, H. Maendl and E. Schwarzmann, Beitr. z. Klin. d. Tuberk, 1928, lxi, 80.—(H. J. C.)*

Mechanism of Phrenicoexairesis.—In isolated phrenicoexairesis no harmful late effects were observed. There was no decided shift in the mediastinum or change in the cardiac position nor disturbance of the digestive organs, even if there occurred an extreme elevation of the diaphragm. Phrenicoexairesis in a 3-year-old child, observed over a period of 5 years, resulted in no unfavorable changes. In addition two other cases are described of 5 and 1-year duration in which there subsequently occurred a normal position of the diaphragm.—*Klinische Beiträge zum Wirkungsmechanismus der isolierten Phrenikoexairese. (I. Mitt.) A. Sonnenfeld, Beitr. z. Klin. d. Tuberk., 1928, lxix, 340.—(H. J. C.)*

Blocking Phrenic Nerve.—The differential diagnosis between acute diseases localized in the lower pulmonic fields and in the upper part of the abdomen is frequently very difficult and of special importance because it often involves the indication for an emergency operation. A diaphragmatic pleuritis, alone or in combination with a basal pneumonia, may simulate an acute condition in the upper abdominal region; it may cause spasms of the abdominal muscles, abdominal pain, vomiting, and retention of faeces and flatus. If a pulmonary focus is present it may be so centrally located as to produce no demonstrable physical signs. In affections of the diaphragm the characteristic pain on pressure over the phrenic nerve and the shoulder pain may be absent. Abdominal pains, transmitted from the diaphragm, are explained by anastomoses between branches of the phrenic nerve and the coeliac plexus. For the differentiation of pain novocaine was injected along the phrenic nerve in several patients; and it seems that abdominal pains of diaphragmatic origin cease promptly after such treatment. Seven cases are reported in some detail to show the efficiency of this procedure. In six of these patients, the blockage of the phrenic nerve yielded definite results; in four cases all abdominal

symptoms ceased promptly and allowed to rule out an acute abdominal condition. In two cases the symptoms remained unchanged after the injection, and subsequent operation revealed the presence of abdominal pathological changes. In one case the pains in the epigastric region persisted, though somewhat reduced in intensity; a diagnosis of subphrenic abscess was made. But the autopsy did not reveal any disease in the abdomen, but only an extensive lower lobe pneumonia. The abdominal pains were probably transmitted through the lower intercostal nerves. The results with this method are encouraging; but further studies are necessary to establish its true significance.—*Die Blockade des Nervus phrenicus, W. Denk, Wien. klin. Wchnschr., April 11, 1929, xlii, 473.*—(*M. P.*)

Thoracoscopy and Cauterization.—In dividing pleural adhesions by the galvanic cautery under the guidance of the endoscope, haemorrhage may occur. This danger can be almost completely eliminated by thoroughly coagulating the thoracic part of the adhesion with the diathermic cautery before severing it by means of the galvanic cautery.—*Thoracoscopy and Cauterization, B. Hudson and G. Maurer, Brit. M. J., May 11, 1929, no. 3566, 849.*—(*W. I. W.*)

Puncture of Chest.—The technique is described with emphasis upon the following points: proper sterilization of skin, infiltration of chest-wall and pleura by a local anaesthetic through a fine needle, puncture with a needle longer than is necessary to enter the pleural space, in order to prevent breakage, the use of a sharp needle and airtight syringe, and preliminary incision down to the intercostal muscles for thoracoscopy. Exploratory puncture is indicated as follows: (1) if fluid is suspected, and it is necessary to know its nature; (2) to distinguish between fluid, new growth, thickened pleura, and solid lung; and (3) if there is doubt whether a pneumothorax exists. The signs of fluid are, as a rule, dulness, weak or absent breath-sounds or bronchial breathing, an absence of adventitious sounds, weak or absent vocal resonance or whispering pectoriloquy. Contrary to popular belief bronchial breathing, in the absence of adventitious sounds, is commonly present over fluid. It should also be emphasized that pus can be present without a rise in temperature. A serous effusion should be explored (1) if it is causing distress, (2) if there is no absorption after three weeks of treatment, (3) if it appears to be causing high fever, or (4) as a diagnostic measure to facilitate X-ray examination, when replacement with air will be necessary. Serous fluid may be removed from the chest (1) by ordinary syphonage, (2) by means of negative-pressure aspirators, (3) by replacement by air or oxygen. The first method is the simplest, but the third method is the best, as it avoids the dangers of aspiration. These are cough, distress, pain, haemorrhage, pulmonary oedema, and sudden death. Also all of the fluid may be withdrawn at one operation. The second method is the least satisfactory. In the ordinary slowly-evolving pneumococcal empyema, the usual method of resection with drainage at the proper time remains the best treatment. Tuberculous empyema should be left undisturbed, or, if causing symptoms, should be replaced by air or oxygen. Acute streptococcal empyema, or a fulminating staphylococcal or pneumococcal empyema should never be treated by an open operation. Aspiration is the proper method of treatment, for the mediastinum has not had time to become fixed, and open operation will prove fatal through pressure changes on the contralateral side. Aspiration may be needed for certain high positive-pressure spontaneous pneumothorax cases, and in certain cases of haemothorax after wounds or accident. In thoracoscopy, care must be taken to limit surgical emphysema, which is apt to occur only after prolonged examination.—*Puncture of the Chest: Its Occasions and Technique, F. G. Chandler, Lancet, November 23, 1929, ccxvii, 1084.*—(*R. M. F.*)

Heliotherapy.—In the treatment of tuberculosis the use of light has not advanced to the scientific stage that it has in the treatment of rickets. The question arises as to how much of the success of heliotherapy is actually due to light and how much to air-bath. In endeavoring to answer such a question one necessarily must measure the three therapeutic agents at work in so called heliotherapy. The measurement of light energy by clinicians is neglected perhaps for two reasons. Light energy varies greatly during the day, from day to day, from season to season, according to altitude, latitude, and to various atmospheric conditions. Secondly, apparatus for the measurement of light energy is complicated and expensive. The photochemical method of measurement devised by Clark is simple and accurate, and is recommended as the method of choice. A hope is expressed that the publication of Clark's improved method will lead to a more definite standardization of dosage in heliotherapy.—*Heliotherapy—Empirical or Scientific? J. R. Earp, Brit. J. Tuberc., July, 1929, xxiii, 137.*—(*H. McL. R.*)

Treatment of Pulmonary Tuberculosis with Quartz Light.—Although a reproduction of natural sunlight might be preferable, as indicated by Freiberg in a recent article, owing to the difficulty and at times impossibility of exposure to natural sunlight, and to the time consumed, the quartz light has found favor. O'Brien has employed it for eight years at the Hampshire County Sanatorium, Massachusetts, and over 750 resident patients have been treated. He discusses Krusen's work at Mount Alto, Pennsylvania, quoting his conclusions, which were favorable to the method, except in far-advanced toxic cases. *Method:* Graduated exposures, beginning with small areas, were first used, but discarded in favor of short general exposures. The patients finally were started with two-minute exposures on the anterior and posterior surfaces at a distance of 30 inches (lamp to treatment table). Each successive treatment was increased by two minutes up to thirty minutes, 15 treatments being given in a 45-day period. They then stopped treatment for fifteen days, and began again with two-minute exposures at 24 inches, subsequent treatments being increased by one minute with the lamp lowered one inch, up to fifteen minutes' exposure at 11 inches. Again two weeks' rest was given and the last course repeated. All patients wore goggles and loin-cloths and females a nipple-band. The aim was to avoid pronounced erythema and this was accomplished. When it occurred treatment was suspended until it disappeared. *Results:* Tables are included showing the effects of treatment as to various symptoms, especially cough and expectoration, lung moisture, weight, appetite, temperature, and occurrence of haemoptyses with control groups, small in number, however. Most patients enjoyed the exposures and found them sedative. Expectoration and lung moisture were decreased in a surprisingly large proportion, as compared with the controls. No unfavorable effect on menstruation in females was observed. *Conclusions: 1:* Artificial heliotherapy, combined with sanatorium routine, is a valuable adjunct in . . . . pulmonary tuberculosis. *2:* It is an . . . . aid . . . . in the reduction of temperature and increasing general resistance. *3:* Very far-advanced cases with high temperatures are not benefited. *4:* Haemoptysis is not a contraindication. *5:* A marked decrease in lung moisture and severity of cough is noticeable. *6:* There is no advantage in producing erythema and tanning is not essential. *7:* Artificial heliotherapy . . . . is sedative . . . . and assists expectoration and natural healing.—*Quartz Light Therapy in Pulmonary Tuberculosis, F. E. O'Brien, Section of Tuberculosis, Massachusetts Medical Society, reported in New England J. M., August 29, 1929, cci, 403.*—(*A. P.*)

Value and Abuses of Ultraviolet Radiation.—An authoritative statement on the abuses in the field of actinotherapy has long been necessary. Within recent years many unqualified practitioners have set themselves up as actinotherapeutists. Manufacturers have taken advantage of the opportunity for mass production of apparatus, some of which is not only useless but dangerous. Recent inquests have supplied evidence that death was due in one instance to electrical shock resulting from faultily designed apparatus. A recent report on ultraviolet therapy by the Medical Research Council failed to stress the abuses in the way light treatments were being administered and chose to attack the subject itself. It is claimed that this report is biassed and very misleading, hence should be rejected. Apparently the Council is of the opinion that ultraviolet therapy is of little or no benefit except in the treatment of lupus. While the Council admits the formation of vitamine D with the use of ultraviolet therapy, its members, apparently influenced by the work of Colebrook, nevertheless believe this vitamine may be supplied in a more satisfactory manner by the use of codliver oil. In differing with the Council in regard to the value of ultraviolet therapy, numerous writers are quoted as having expressed views favoring this form of treatment. Duke-Elder, in a report on 700 cases treated with ultraviolet light, believes he has witnessed marked therapeutic benefit in tuberculous iridocyclitis, tuberculous choroiditis, sclerokeratitis, dacryocystitis and phlyctenular keratitis. The beneficial mental improvement of patients receiving light, natural or artificial, should not be overlooked. It is also held that both local and general phototherapy is often beneficial in the same case, but in certain cases one form of radiation may be of more value than the other. It is also to be noted that the technique as regards local and general radiation is often very different. For instance, the technique in the treatment of lupus and that for the increased bactericidal power of the blood bear little relation to each other. In the treatment of lupus a caustic action is necessary, while for the increased bactericidal power a minimal erythema dose is essential. While many of the beneficial results obtained from light therapy are as yet unable to be explained or understood scientifically, nevertheless clinical observation of such results at least warrants further investigation and more rigid and

careful application of ultraviolet therapy by the use of dependable apparatus in the hands of qualified actinotherapeutists.—*The Medical Research Council and Ultra-Violet Radiation, M. Weinbren, Brit. J. Tuberc., July, 1929, xxiii, 117.*—(*H. McL. R.*)

Sources of Ultraviolet Radiation.—Because of the necessity of heating the radiating substance to 5400°F. or higher in order to obtain appreciable ultraviolet radiation, the sources are practically confined to electric arcs between electrodes of metals of carbon and of mercury-vapor in a closed quartz-glass tube. The Mazda tungsten-filament lamp, enclosed in a bulb of special glass that transmits ultraviolet at wave-lengths from 280 to 310 millimicra has been considered for a source of ultraviolet radiation. Examination of such lamps revealed no appreciable amount of ultraviolet of wave-lengths less than 310 millimicra (3100 angstrom units). The nickel-cored carbon arcs emit strongly at 230 and especially at 350 millimicra, and the material is inexpensive, quiet burning and easy to operate. The emission spectrum of tungsten is weak in the region of wave-lengths shorter than 230 millimicra. About 6 per cent of the total radiation from quartz-mercury-vapor lamps is of wave-lengths shorter than 290 millimicra, which are entirely absent in sunlight, and have a high germicidal action. Air-cooled burners operated on alternating current and water-cooled burners on direct current appear to have a higher ultraviolet radiation than air-cooled direct current burners. The arc emits but little infrared radiation. The carbon arc is the hottest source of radiation readily obtainable, and is the closest approach to sunlight in this respect. There is a strong violet "cyanogen" band in the spectrum at 389 millimicra, which is relatively far more intense than similar wave-lengths in the sun's spectrum. Under the same condition, however, the sun's radiation in the visible spectrum is far more intense than is obtained in the white-flare carbon. Except for the "cyanogen" band, the electrodes of pure carbon are quite nonluminous. It has been found that the radiation from the carbon arc depends on (1) the size and the kind of electrode, (2) the direction of the current when direct current is used through combinations of neutral-cored and impregnated carbons, and (3) the amount of electric current. This information has resulted in improvements in arc lamps; therefore it is incumbent on the purchaser to operate a lamp as was intended by the maker, since increase in the current in the arc results in disproportionate increase in the intensities of the different wave-lengths. The spectral energy distributions of representative samples of cored carbons were compared, with an alternating current of 30 amperes, electrodes 12.7 mm. in diameter. In the white-flame carbon arc the ultraviolet radiation of wave-lengths less than 320 millimicra is extremely weak, the radiation being concentrated in the cyanogen band at 389. In the blue-flame carbon arc, the ultraviolet radiation of wave-lengths less than 310 millimicra exceeds that of all the other arcs compared. In the yellow flame there is considerably more radiation, extending from 290 to 320 millimicra, in the ultraviolet, which is weak in the neutral core arc. The red-flame carbon arc is conspicuous for its intense emission extending from 550 millimicra in the orange beyond 750 in the red.—*Sources of Ultraviolet Radiation and Their Physical Characteristics, W. W. Coblentz, J. Am. M. Ass., June 1, 1929, xcii, 1834.*—(*G. L. L.*)

Solarization of Vitaglass.—It is unfortunate that so much has been said about solarization that there is a general impression that after ultraviolet-transmitting glass is aged there is no therapeutic effect. Observations were made over a period of a year with Vitaglass, estimations being made of the haemoglobin and blood calcium and phosphates. The glass was brushed daily and washed once a week to remove accumulated dust and soot particles. The glass was found to pass through the solarization period during the first few weeks, at the end of that time solarization being complete, the glass still remaining permeable to ultraviolet rays in sufficient amounts to be of clinical value. Observations were also made that infants and children may be given sun-baths of two or three hours daily throughout the winter, not as a substitute for ultraviolet-lamp irradiation in the cure of disease, but as a prophylactic measure. There are ample ultraviolet rays in the antirachitic range during the winter to be of definite value when exposures are made in the direct path of the sun's rays through Vitaglass, since enough of these rays penetrate to prevent rickets and spasmophilia in a properly fed infant.—*The Clinical Value of Sunlight Through Ultraviolet Transmitting Glass, G. W. Caldwell and R. H. Dennett, J. Am. M. Ass., June 22, 1929, xcii, 2088.*—(*G. L. L.*)

Treatment of Tuberculosis with Ergosterol.—It has been shown experimentally that the addition of fat-soluble accessory foodstuffs is adequate for curing rickets. Recently the nutritional treatment of tuberculosis by use of ergosterol has been found to be very efficacious, especially in lupus. Ergosterol

appears to act favorably upon cutaneous, bone and joint and pulmonary tuberculosis. Explanation of how it works is not known, but it is a significant fact that phosphorated codliver oil and heliotherapy seem to produce essentially the same results in rickets and in tuberculosis. This causes one to wonder whether in both diseases the results are not the same as those produced by ergosterol. We now have a pharmacological remedy which is "dosable" and this marks a considerable advantage. It is known that excessive heliotherapy is harmful in pulmonary tuberculosis. The same is true of ergosterol, vigantol and other similar preparations. Therefore, overdosing must be prevented, and the question of dosage must be solved before it is safe for these drugs to be placed in the hands of practitioners generally. This is a very important consideration. It is interesting that the natural treatment,—high climate, sun, ultraviolet light, and foods rich in fat, phosphorated codliver oil,—all give favorable results in both tuberculosis and rickets. The problem is to find the optimal form, use and dose. Our conception of vitamines must change. Formerly it was thought that a vitamine was an indispensable substance which must be introduced from without. It is demonstrated now that it can be formed in the body in the fat tissues by ultraviolet light.—*G. v. Bergmann, Rachitis- und Tuberkulosebehandlung, Deutsche med. Wchnschr., August 23, 1929, lv, 1407.*—(*H. S. W.*)

Pigmentation.—Pigmentation is a normal attribute of the skin in contact with air and sunshine, and it should be considered in connection with other functions of cutaneous physiology and general metabolism. Pigment is not a screen to stop the penetrating light rays. It is a substance which transforms the rays of short wave-length into rays of longer wave-length, the latter being more penetrating. It also transmits heat to the subcutaneous layers, especially when the total spectrum is used. The capacity of the skin to pigment (in heliotherapy) is usually directly proportional to the capacity to heal, and those persons who do not pigment are the ones who have a poor prognosis in tuberculosis. Pigment is "a reservoir of 'radioactivity'."—*A Note on Pigmentation, A. Rollier, Brit. J. Actinother. & Physiother., July, 1929, iv, 78.*—(*H. S. W.*)

Codliver Oil in Tuberculosis.—As the quality of codliver oil is greatly affected by the promptness with which the livers are extracted, it is important that this extraction should be accomplished with as little delay as possible and under conditions that reduce to a minimum the detrimental effects of atmospheric oxidation, which is known to destroy vitamin A. In ascertaining the vitamin titre of codliver oil, the two fat-soluble vitamines, A and D, must be assayed separately, since the curative effects of the one do not influence the lesions resulting from a deficiency of the other, and there is no parallel between the relative amounts of vitamin A and vitamin D present in different samples. For nearly a century codliver oil has been prescribed for tuberculosis. A number of theories have been advanced to explain the action of the oil in this disease. It has a high food value, due to the high percentage of unsaturated fatty acids which are more easily utilized than the saturated compounds in the body processes. Besides being more readily absorbable, it promotes the absorption of other fats. Animals fed on diets which, although otherwise well balanced, are deficient in fat-soluble vitamin A are very susceptible to pulmonary infections. Codliver oil is a useful vehicle for the administration of vitamin A in tuberculosis, as the vitamin appears to play a part in raising the bodily resistance to infection. It is also a growth-promoting factor. It is only recently that the fat-soluble vitamin D has been differentiated from vitamin A, they previously being regarded as one and the same vitamin. The most characteristic evidence of vitamin-D deficiency is seen in rickets, a disease which can be prevented, or, when present, cured, by the administration of codliver oil. This healing or prevention is accomplished by the promotion of calcium metabolism, and evidence is not wanting to show that codliver oil also promotes calcium metabolism in the nonrachitic animal. Kerschner has suggested that there are at least three good reasons for increasing the calcium content of the body in tuberculosis: (1) to overcome demineralization and thus restore the normal calcium balance, a condition very essential to health; (2) to secure the deposition of calcium in tuberculous foci in order to promote healing by mechanically inducing fibrosis and also calcification of the lesion; and (3) to stimulate phagocytosis. To raise the calcium reserve it is necessary to administer calcium (lactate) together with an "activating substance," such as codliver oil which will enable the calcium to be utilized.—*Codliver Oil in the Treatment of Tuberculosis, C. R. Boyes and J. S. White, Brit. J. Tuberc., April, 1929, xxiii, 75.*—(*J. S. W.*)

Metallic Salt Therapy.—Manganese is considered a good therapeutic agent in certain cases of tuberculosis in that no harm has been observed from its use. The author

reports 162 cases, mostly in the second and third stages, that had been treated for about a year, and about half of them were freed from bacilli as well as undergoing a marked increase in weight. The treatment is indicated in the older cases and those in poor general condition.—*Metallsalztherapie ad modum Walbum, J. A. Frederiksen, Zeitschr. f. Tuberk., 1928, li, 291.*—(*H. J. C.*)

Metallic Salt Therapy.—An extensive report of various metallic salt compounds is presented by Walbum as a result of tests in rabbits and guinea pigs especially. The author does not claim that these salts act directly upon the infecting microbe but believes that they act upon the cells of the animal organism either as an irritant or as a catalyzer affecting certain enzymatic processes in the cells.—*Metallsalztherapie und Metallsalzprophylaxe, L. E. Walbum, Zeitschr. f. Tuberk., 1928, li, 209 and 273.*—(*H. J. C.*)

Treatment of Pulmonary Tuberculosis with Metallosan.—Metallosan, the chemical nature of which is not given, contains gold in a form that acts as a satisfactory tissue irritant and has iodine, which is liberated and has a bactericidal action as well as a radioactivity that acts catalytically upon the injured tubercle cells, as well as acting upon the tenesmus of the bronchial musculature in a relaxing fashion. The author claims favorable results in pulmonary and laryngeal tuberculosis following the use of this inhalation method.—*Über die Wirkungsart eines neuen Inhalationspräparates gegen Lungen- und Kehlkopftuberkulose, W. Pettersson, Zeitschr. f. Tuberk., 1928, li, 451.*—(*H. J. C.*)

Treatment of Pulmonary Tuberculosis with Metallosan.—Metallosan was found by the author to be a valuable agent especially in the presence of a marked perifocal infection. Harmful effects were never observed in the use of this preparation.—*Über klinische Erfahrungen mit Metallosan nach Dr. Pettersson, H. W. Giercke, Zeitschr. f. Tuberk., 1928, li, 456.*—(*H. J. C.*)

Sanocrysin Treatment.—This study deals with a series of 97 cases of pulmonary tuberculosis treatment with sanocrysin since 1925 at the Warwickshire (England) Sanatorium. Of these 87 were adults and 10 were children. The series included patients in all stages of the disease except the very advanced, and the majority had failed to respond satisfactorily to routine treatment. The length of the interval between doses was determined by the weight of the patient. The dose began with 0.10 gm. and was increased gradually up to 1 gm. Statistical charts of the results are given. In treating the children no undesirable symptoms were observed, and, what is more remarkable, every case showed a good increase in weight throughout the time when the injections were being given. *Conclusions: 1:* Provided the patient has fairly good physique and no abdominal tuberculosis, and that other vital organs are normal, it is reasonable to assume that the immediate results with sanocrysin will be good and that the patient will benefit by the treatment. *2:* It is particularly useful in bilateral cases treated by collapse therapy, and the patient need not develop shock symptoms or a febrile reaction in order to obtain full benefit from the treatment. *3:* By suitable dosage all shock and unfavorable symptoms can be avoided, and the patient's weight should increase throughout treatment, although large doses are given. *4:* The remote results are only encouraging in those cases which lose their tubercle bacilli and become clinically arrested after treatment. *5:* Sanocrysin is well tolerated by children, and most encouraging immediate results have been obtained in those suffering from pulmonary tuberculosis who did not respond to routine treatment.—*Sanocrysin Treatment of Pulmonary Tuberculosis, F. Heaf, Lancet, June 1, 1929, ccxvi, 1138.*—(*B. T. McM.*)

Sanocrysin.—The author used sanocrysin in 85 open cases of tuberculosis with outspoken bilateral disease predominantly of chronic productive form. In 9 of the cases there occurred pulmonary haemorrhages with 5 of them having severe general symptoms. In addition there were noted symptoms of kidney irritation, gastrointestinal disturbances, transient exanthemata, and rarely inflammation of the lips and mucous membranes of the mouth. Frequently there occurred after an initial improvement of the general condition a turn for the worse. Exceptionally high gains in weight were noted in cases having no complications. A severe case of sanocrysin dermatitis is reported in detail.—*Erfahrungen mit Sanocrysin, Erna Warlimont, Zeitschr. f. Tuberk., 1928, lii, 188.*—(*H. J. C.*)

Treatment of Pulmonary Tuberculosis with Solganol.—Solganol was found to be an efficient detoxicating preparation in 20 cases of tuberculosis, and it was used in productive, cirrhotic phthisis in small doses, and in fresh exudative processes in higher doses. Certain cases of productive pulmonary and laryngeal tuberculosis are suitable for gold treatment. Six cases of tuberculosis in children remained uninfluenced or

became worse.—*Zur Dosierungsfrage in der Goldbehandlung der Lungentuberkulose, zugleich ein Beitrag über Erfahrungen mit Solganol, F. Ernst, Beitr. z. Klin. d. Tuberk., 1928, lxix, 428.*—(*H. J. C.*)

Combined Tuberculin Gold Treatment of Tuberculosis with Tuberculin and Gold Combined.—With the view that tuberculin causes a general febrile reaction and that then gold preparations cause a critical decrease of the temperature, the author suggests a combined tuberculin gold treatment for tuberculosis. At 3- to 4-day intervals, beginning with a weak tuberculin solution, increasing injections are given until a general reaction occurs and at the height of reaction the gold (Krysolgan) is given intravenously. With the proper dose of the gold preparation the temperature drops and remains normal. In the interval of at least 10 days the tuberculin and subsequent gold injections are repeated with increasing tuberculin doses. Among 300 cases thus treated there were 100 in which a final dose of 100 mgm. was reached and no harmful effect was seen in any of the cases. Among the gold preparations tried, including Aurophos, Krysolgan, Tryphal and Solganol, Aurophos was found less toxic but less active than Krysolgan. Krysolgan is given the preference in use with tuberculin over the other preparations.—*Die kombinierte Tuberkulin-Goldbehandlung der Tuberkulose, E. Schulz, Beitr. z. Klin. d. Tuberk., 1928, lxix, 422.*—(*H. J. C.*)

Treatment of Pulmonary Tuberculosis with Lopion.—The authors used in animal experiment and in cases of pulmonary tuberculosis in man a new gold compound called *Lopion*, which is a gold-thiourea combination, containing about 42 per cent gold, and which proved in their hands less toxic and more easily tolerated than any of the newer preparations tested. It was used in two markedly active highly febrile cases of tuberculosis and in 8 cases with chronic indurative-productive pulmonary tuberculosis. The material was given intravenously during a period of 1½ to 8 months, and at intervals of 2 to 8 days, in doses of 0.05 to 1.0 gm. to a total of 2.5 to 15 gm. With the exception of one case, given a total of 7.6 gm., all the patients showed improvement. No exanthemata or kidney or distressing general effects were noted. The advantage of the preparation lay in the fact that it was deposited primarily in the liver, and, therefore, unlike Sanocrysin, Solganol and other gold combinations, did not affect the kidneys.—*Die Behandlung bestimmter Formen von Lungentuberkulose des Menschen mit Lopion (Goldthioharnstoffverbindung), K. Henius and Wissing, Beitr. z. Klin. d. Tuberk., 1928, lxix, 597.*—(*H. J. C.*)

Treatment of Tuberculosis with Copper.—Injections of copper will not cure tuberculosis. But he who knows how to use it correctly will find it a valuable accessory in the treatment of surgical tuberculosis. It is especially helpful when used in conjunction with heliotherapy and general upbuilding treatment. Several cases of local application of copper (*Lecutyl*) after curettage are reported, with rapid and complete cure. It may also be used with methylene blue internally or may be injected.—*Zur Kupferbehandlung der chirurgischen Tuberkulose, A. Strauss, Deutsche med. Wchnschr., June 28, 1929, lv, 1087.*—(*H. S. W.*)

Treatment of Pulmonary Tuberculosis with Tebeform.—In extension of Behring's views that iodoform is active only where destruction of tissue exists, the author has for a number of years used guaiacol-iodoform for the treatment of pulmonary tuberculosis. The preparation has been improved by increasing its iodoform content, as well as being made available for intramuscular in place of intravenous injection. Tebeform, a new preparation, consists of guaiacol-tetraiod-methan - dithymol - diiodid, to which is added camphor and eucalyptus to reinforce its action. The dosage consisted of daily injections of 1 cc. intramuscularly. Disinfection experiments with bacteria revealed an action between that of mercuric chloride and carbolic acid. Exceptionally large doses were eventually tolerated by sanatorium cases without harm. Tebeform should be given so long as there are tubercle bacilli in the body.—*Neues chemotherapeutisches Heilverfahren bei der Lungentuberkulose, W. Müller, Zeitschr. f. Tuberk., 1928, li, 203.*—(*H. J. C.*)

Effect of Iodized Oils on Serous Membranes.—Iodized oil when injected intrapericardially greatly increased the visibility of the heart in the fluoroscope, but it was noted that in the dogs so treated the cardiac shadow progressively increased in size until the animals all died in about two weeks. At autopsy marked pericardial effusion and pericarditis were found but no bacteria were detectable. In some instances there were localized pneumonia and some degeneration of the cardiac muscle. There was occasionally a pleural or an ascitic effusion and, regularly, an enlargement of the tracheobronchial lymph nodes. When injected into the pleural cavity and into joints, such oils pro-

duced marked irritation. Lipiodol (Lafay) and Lipiodin ("Ciba") were used. Experiments showed that lipiodol, poppy-seed oil and ethyl brassidate are equally irritating, that sesame oil is somewhat less so, and that olive oil is practically innocuous. Incidentally the experiment reveals a method of inducing pericarditis.—*The Effect of Iodized Oils on Serous Membranes, L. A. Crandall and E. L. Walsh, Radiology, June, 1929, xii, 499.*—(*H. S. W.*)

Action of Nonspecific Irritants on Blood in Tuberculosis.—Following the parenteral introduction of minimal amounts of nonspecific irritants (Aurophos, Lipatren, calcium chlorate, neosalvarsan, and ether-extract antibodies according to Jessen) no definite change in the capillaries examined microscopically could be determined. In the majority of cases there was a constriction of the capillary loops a few minutes after the injection which was the result of a reflex effect upon the vegetative nerve-ends. After the use of Aurophos there occurred in the majority of cases an increase in the neutrophiles, a diminution of the leucocytes and a shift to the left. Calcium called forth an eosinophilia while after manganese no changes in the white blood picture occurred.—*Beitrag zur Frage der Wirkung unspezifischer Reize auf die Capillaren und das weisse Blutbild bei Tuberkulösen, R. Braun, Beitr. z. Klin. d. Tuberk., 1928, lxix, 70.*—(*H. J. C.*)

Lipoid Treatment and Red-Cell Sedimentation Reaction.—Various lipoid preparations of Much are believed to cause a diminution in cell destruction, which is expressed as a decrease of the sedimentation reaction of the red blood corpuscles. It is not believed, however, that this is the result of the direct action of the lipoids on the suspension condition as the result of the lipoid antibody action.—*Über Lipoidzufuhr und Blutsenkungsreaktion, E. Paulsen, Beitr. z. Klin. d. Tuberk., 1928, lxix, 667.*—(*H. J. C.*)

Treatment of Pulmonary Tuberculosis with Lipatren.—Lipatren was given in tablet form to 56 cases of pulmonary tuberculosis. Too large doses acted as a laxative. Only moderately severe and severe cases were treated. General and focal reactions were observed, and in the blood there was an increase of lymphocytes as well as an improvement in the sedimentation rate. Comparable statistics with a like series of cases not given Lipatren revealed that the differences between the two series were only slight, and the number of cases that became free from bacilli was about the same. It is not believed that the preparation can be used in general practice.—*Perorale Lipatrenbehandlung der Lungentuberkulose, W. Münchbach, Beitr. z. Klin. d. Tuberk., 1928, lxix, 565.*—(*H. J. C.*)

Lipatren in Pulmonary Tuberculosis.—Good results are reported from the use of Lipatren excepting in cases with outspoken lobar exudative conditions. Mild reactions were noted after cautious intramuscular use, which resulted in improvement of the sedimentation and a shift to the left of the leucocytes as well as an improvement in the physical condition, a diminution in the sputum and an increase in weight. The oral use of tablets did not give as definite results.—*Über unspezifische Reiztherapie der Lungentuberkulose, K. Schlapper and H. vonOppenkowski, Beitr. z. Klin. d. Tuberk., 1928, lxix, 416.*—(*H. J. C.*)

Results of Tuberculin Therapy.—The author used Old Tuberculin intracutaneously in 98 cases of tuberculosis over the period of 1922–1927, and the age-range was from 11 to 40 years. Among these 26 had tubercle bacilli in the sputum. Of the 26 with tubercle bacilli in the sputum 2 died within one year, 5 were unchanged, and 7 were improved, while 12 were closed cases and these had remained closed over a period of 3 years after the conclusion of treatment. Early infiltrations were not included in the statistics. According to the Sternberg classification all the cases belonged to group III and were subcompensated. This classification includes individuals not actually ill but not able to work. The condition is determined by the temperature, the general well-being and the body weight. At the conclusion of the study there were 71 of the 98 cases that belonged in groups I and II, 19 in group III and 5 in group IV, while 3 had died. Thus 71 of the cases had improved, 19 were unchanged, and 8 progressed unfavorably.—*Bericht über fünfjährige Behandlungsergebnisse bei 98 Lungentuberkulösen mit intracutanen (subepidermalen) Injektionen mit Alttuberkulin Koch, M. J. Gutmann, Beitr. z. Klin. d. Tuberk., 1928, lxx, 613.*—(*H. J. C.*)

Treatment of Pulmonary Tuberculosis with Helpin.—The author used Helpin in 49 cases of pulmonary tuberculosis, especially of the severe destructive type, 1 to 2 cc. being given every second day. The results of the treatment were measured by increasing weight, improvement in the general condition, diminution of the sputum and reduction in febrile action. No focal reac-

tions of any kind were noted. Improvement is recorded in 14 cases treated.—*Erfahrungen mit Helpin bei Lungentuberkulose, E. Homann, Zeitschr. f. Tuberk., 1929, liii, 28.*—(*H. J. C.*)

Diagnosis of Sinus Disease.—Independent clinical and roentgen-ray examinations of the paranasal sinuses were made in a series of 200 patients with bronchial asthma. While a high incidence of sinus disease was found both by roentgen-ray (80.5 per cent) and clinically (67 per cent), there was extensive disagreement between the findings of the two examinations in individual sinuses. Clinical and roentgen-ray examinations of a control group of 50 patients without a history of respiratory infections or history of sinus disease showed a roentgen-ray incidence of sinus involvement of 72 per cent and a clinical incidence of 26 per cent, the number of involved sinuses per person on roentgen-ray examination being practically the same in asthmatics and controls.—*The Relative Efficiency of the Clinical and the Roentgenologic Methods for Sinus Disease Diagnosis, R. A. Kern and H. P. Schenck, Am. J. M. Sc., August, 1929, clxxviii, 168.*—(*W. I. W.*)

Bronchosinusitis Disease.—Since all portions of the respiratory tract are directly connected, the entire tract should be considered in an infection of any portion of it. Hence, the term "bronchosinusitis disease" might be more properly used than bronchitis, tracheitis or sinusitis. Such conditions usually manifest themselves as the end-result of pathological conditions of the respiratory tract extending over a period of years. The inflammatory changes at the root of each lung are of particular interest. In young children in whom the disease is uncomplicated, there is found at first an inflammation of the mucous lining of the trachea and bronchi. Later this reaction spreads, resulting in an increase in the connective tissue which surrounds and binds together the bronchi, arteries and veins. The lung hilum soon becomes a mass of connective tissue distinctively revealed in the roentgenograph as fairly definitely limited to the hila. Later even the primary lobules may be involved. The lymphatics are not especially involved, and hence not enlarged, as there is considerable bronchial drainage. The roentgenologist may often foretell the conditions in the sinuses by the pathological changes at the roots of the lungs. The converse, however, is not true. In tuberculosis there is much more definite lymph-node involvement and increase in size of nodes at the hila, with less connective-tissue increase, than in the typical case of bronchosinusitis disease. In studying a series of 90 children from birth to 8 years of age, certain infections of the respiratory tract have been observed to develop into clinical and roentgenological bronchosinusitis disease. After weeks or months after birth they may develop symptoms of thymic stridor, found to be due to infection of more or less the entire respiratory tract, no doubt due in many instances to retention of mucus following birth. Some recover spontaneously. Others have frequent attacks of respiratory infection and common colds, and develop frank sinusitis, bronchitis or asthma at from 1½ to 3 years of age. After a period of many years, the adult type of bronchosinusitis disease is delineated. The importance of this condition is equal to that of tuberculosis.—*Bronchosinusitis Disease, W. W. Wasson, J. Am. M. Ass., December 28, 1929, xciii, 2018.*—(*G. L. L.*)

Influenza and Latent Pulmonary Tuberculosis.—The author reports on the roentgenological findings in latent pulmonary tuberculosis at the conclusion of influenza. The course of the acute infection was severe in all three cases while the residual tuberculosis ran a mild course. The latent tuberculous pulmonary foci are considered to be a *locus minoris resistentiae* for a pulmonary infection but are not the occasioning cause but rather an eliciting moment with a flare of the tuberculous pulmonary condition.—*Über die Prädilektionsstellen der Influenza bei latenter Lungentuberkulose und ihre röntgenologische Darstellung, F. Baum, Beitr. z. Klin. d. Tuberk., 1928, lxix, 117.*—(*H. J. C.*)

Penetrating Chest Wounds.—A report is made of 341 cases of penetrating wounds of the chest, in which there was a mortality of 15 per cent, 89 patients discharged as improved and 201 as cured. The great majority of cases yield to conservative treatment. Penetration may exist without the presence of air or fluid in the pleural cavity. Injuries of the heart and diaphragm, pneumonia and rib fractures occur infrequently. Empyemata and other serious infections result in less than 2 per cent of cases. Haemorrhage is the most common cause of death. Pain, dyspnoea and cyanosis are relieved by aspirating blood, but intrathoracic haemorrhage is controlled by deferring aspiration for 48 hours. Aseptic temperature may be reduced by removing blood from the pleura.—*Penetrating Wounds of the Chest: Review of Three Hundred and Forty-One Cases, F. K. Boland, J. Am. M. Ass., November 30, 1929, xciii, 1716.*—(*G. L. L.*)

Dust Hazards in Abrasive Industry.—In the course of clinical and roentgenological observations on people exposed to the inhalation of abrasive dust, certain nondusted individuals with cough and expectoration were radiographed. In many of these the X-ray report of first-stage silicosis was made. It appears that chronic bronchitis and the pulmonary changes incident to advancing age may cast shadows similar to those caused by early stages of silicosis. People exposed to dust were radiographed in 1924 and again in 1928, with very slight differences being revealed. Of 69 such people only one showed second stage silicosis and he had been exposed for 26 years. Altogether 137 people were X-rayed who had been exposed over periods varying from 10 to 42 years. Of them 42 were normal, 12 showed slight silicosis, 77 showed first stage and six second stage silicosis. None were in the third stage. Eleven cases showed healed pulmonary tuberculosis.—*The Dust Hazard in the Abrasive Industry, Second Study, W. I. Clark, J. Industr. Hyg., March, 1929, xi, 92.*—(*H. S. W.*)

Anthracosis and Tuberculosis.—The problem of anthracosis and tuberculosis was studied on a large group of coal-miners, utilizing Besredka's complement-fixation test, the sedimentation reaction and roentgenographs. The Besredka reaction was positive in 20 per cent of the roentgen stage-I cases and in 60 per cent of the stage-II cases. The author believes that the tubercle bacillus plays an important rôle in cases of anthracosis.—*Anthrakose und Tuberkulose, H. Schulte-Tigges, Zeitschr. f. Tuberk., 1928, lii, 290.*—(*H. J. C.*)

Aetiology of Silicosis.—Silicosis is a result of the local action of hydrated silica upon the pulmonary tissue. This action is of a physicochemical nature, and the speed of its development—other things being equal—depends upon the rapidity with which fresh silica hydrosol is formed and brought into contact with pulmonary tissue. Substances which favor the formation of silica hydrosol from silica, when added to the silica dust, accelerate the development of silicosis, for example, alkalies. Substances which retard the formation of hydrosol from silica, or which coagulate the hydrosol when formed, prevent silicosis. Examples of this are coal-dust and clays. The action of silica in producing nodular pulmonary fibrosis has not been parallelled so far by any non-siliceous substance. Silica is a normal constituent of plant and animal cells; its presence seems essential in certain tissues, and its absence from the food of the organism is disastrous. The study of the rôle of silica in biology suggests that many of the processes of cell metabolism belong to the realm of colloidal physics. In therapeutics, silica has a place comparable to that of lime.—*Some Notes on the Biophysics of Silica and the Etiology of Silicosis, P. Heffeman, Brit. M. J., September 14, 1929, no. 3584,489.*—(*W. I. W.*)

Silicosis.—The occurrence of silicosis in the various industries, the manifestation of the disease as it presents itself to the medical practitioner, and the legislation which has been brought into being within recent years, are discussed.—*The Present Position of Silicosis in Industry in Britain, E. L. Middleton, Brit. M. J., September 14, 1929, no. 3584, 485.*—(*W. I. W.*)

Tuberculosis and Silicosis.—Physical and roentgenological examination of 919 employees in sandstone works in Ohio have been completed recently with the result (1) that the incidence of silicosis was found to be low but was higher in proportion to prolonged duration of employment, and (2) that the incidence of tuberculosis among the workers was low. Of 912 X-ray plates, 55.1 per cent showed some pathological change, including 28.5 per cent which had definite silicosis; but only 1.9 per cent showed tuberculosis, which corresponds to the incidence of tuberculosis in the district in which the quarries are located. The silicosis which developed, appeared only after an average 16¼ years' exposure. The rock contains from 92.15 per cent to 97 per cent crystalline silica, but the crystals are obtuse, are held by a matrix (3 to 8 per cent) of carbonates, silicates, kaolin, sulphides and oxides of iron, and this may be responsible for the relative innocuity of this silica.—*Silicosis with Low Incidence of Tuberculosis, E. R. Hayhurst, D. J. Kindel, B. E. Neiswander and C. D. Barrett, J. Indust. Hyg., September, 1929, xi, 228.*—(*H. S. W.*)

Cement Dust Lung.—Cement consists of 57 to 66 per cent lime, 2 to 4 per cent infusorial earth, 19 to 26 per cent silicic acid and 4 to 10 per cent of iron oxide, and the mesh of cement dust is about 0.06 millimetres. Inhalation experiments in rabbits revealed that the cement dust is taken up in the lungs by phagocytic cells similar to those acting on coal dust, and in distinction to silicic acid dust there was only a mild tendency toward inflammation. Among 100 cement workers there were 21 cases of pneumonoconiosis, 7 with the hilum form and increased radiating strands, and 14 with the pulmonary form. Most of the workers had

served for more than 10 years and in none of the 100 cases was there one with open tuberculosis, but in 10 there were shadows in the upper lobe of the cirrhotic type. It is concluded that cement inhalation does not predispose to tuberculosis, nor does it tend to cause a breaking down of a healed case.—*Über Zementstaublunge, F. Schott, Beitr. z. Klin. d. Tuberk., 1928, lxix, 43.*—(*H. J. C.*)

Asbestosis.—In 15 cases of asbestosis, cough and dyspnoea were the cardinal symptoms. In this series of cases the shortest period of exposure to asbestos dust was one year and the longest fourteen years. Roentgenographs showed a diffuse fibrosis affecting chiefly the lower two-thirds of the lung. Some of the films exhibited a "ground glass" appearance. The bronchial striations toward the lung bases were prominent and seemed to spread out to form a fine network, giving an appearance like that of a cobweb. As the striations radiate outward from the lung roots, they cut the edge of the cardiac shadow, especially on the left side, giving a shaggy appearance as if the heart were encased in coarse felt.—*Pulmonary Asbestosis, W. B. Wood, Tubercle, May, 1929, x, 353.*—(*W. I. W.*)

Asbestos Fibres in Pulmonary Lesions.—Asbestos fibres can be demonstrated in the corns from which the workers suffer, in the upper respiratory tract, in sputum, in the lung, postmortem and in animal tissues. The so-called "curious bodies" are derived from asbestos fibres. In view of the marked prominence of foreign body-giant cells in the sections from the guinea pig, it is important that tubercle bacilli should be demonstrated in sections of the human lung in cases of pulmonary asbestosis before assuming that tuberculosis is present as a complicating factor.—*The Presence of the Asbestos Fibre in the Lesions of Asbestos Workers, S. R. Gloyne, Tubercle, June, 1929, x, 404.*—(*W. I. W.*)

Physiology of Atelectasis.—The lungs are normally the best drained organs in the body, the movement of secretion outward being maintained by the cilia and by coughing. There is also physiological evidence that peristaltic muscular contraction of the walls of the air-ways is a normal activity of the lungs. Shallow breathing predisposes to bronchial obstruction and thus to atelectasis in the obstructed areas, while deep breathing tends to distend the air-ways and to reopen atelectatic areas. The natural stimulant to deep breathing is the carbon dioxide produced in the body. The lungs are innervated through the vagi and the sympathetics. The vagi generally exert a tonic and constrictive control over the calibre of the air-tubes and sacs. In the frog nervous reflexes may be elicited which cause contraction of the lungs. It is probable that in man any stimulus which tends reflexly to influence respiration toward deep or toward shallow breathing will act also on the lung to alter the calibre of the air-tubes. Rapid shallow breathing may induce cyanosis even in normal men, the insufficient aeration of the lungs probably being due to a passive rather than an active constriction of parts of the lungs. Physical exercise induces deeper and fuller respiration, and the author has in this connection proved that the air-tubes are enlarged under exercise. It is thus safe to infer that inhalation of carbon dioxide tends to dilate the bronchioles and air-sacs, just as its inhalation in air or oxygen stimulates breathing. On the other hand, shallow breathing is probably an important contributing cause in the production of cyanosis in pneumonia through the constriction of the air-tubes and sacs of the lung. There is a functional element, therefore, in the course of pneumonia which must be combated from the side of the physiology of respiration rather than from the side of bacteriology or serology alone. It is now the generally accepted treatment of carbon-monoxide asphyxia to administer oxygen containing 5 per cent carbon dioxide. The treatment, as developed by the author, tends to prevent the development of pneumonia, as it reopens atelectatic areas induced by the shallow breathing of asphyxia. The administration of carbon dioxide following a general anaesthesia also tends to prevent pneumonia. It may be of therapeutic value even in the advanced stages of pneumonia.—*The Physiology of Atelectasis, Y. Henderson, J. Am. M. Ass., July 13, 1929, xciii, 96.*—(*G. L. L.*)

Massive Collapse of Lung.—Massive pulmonary collapse or atelectasis has been described in a great variety of clinical conditions. However, careful analysis of this vast clinical material will disclose that most of the cases can be classified into three groups: *Group 1:* Cases with gross or manifest bronchial obstruction by foreign body, endobronchial neoplasm, retained blood clots, diphtheritic membrane, etc. *Group 2:* Cases in which the primary factor is an interference with the respiratory movements, through muscular paresis or paralysis, voluntary or reflex inhibition of the muscles of respiration from pain or inflammation, prolonged faulty posture, etc. When with this is associated an increase in the bronchial secretions and a suppression of the cough reflex, the accumulated and retained secre-

tions will occlude the bronchi and thus lead to atelectasis. *Group 3:* Cases in which extrabronchial pressure, due to neoplasm or aneurysm, enlarged lymph nodes or sclerotic tissue, leads to gradual stenosis of the bronchus, the bronchial occlusion being rendered complete either by mucosal turgescence or by bronchial spasm, with retained secretions. In all these cases, following the bronchial occlusion, the alveolar air is absorbed by the pulmonary circulation and atelectasis results. Cases are presented to illustrate the essential mechanism in these three main groups. The clinical picture as well as the physical and roentgen signs are characteristic, and they are similar in all cases. The onset is usually sudden, with evidence of marked respiratory embarrassment and shock. The characteristic physical signs are markedly diminished mobility of the involved hemithorax, narrowing of the interspaces, pulling of the trachea, heart and diaphragm toward the affected lung, flatness to percussion, harsh or absent breath sounds, and no râles over the affected lung. The roentgen examination reveals a dense homogeneous shadow where the atelectasis exists, and is corroborative of the displacement of the trachea, heart and diaphragm toward the affected lung. This clinical picture and some of the physical signs may simulate pneumonia, pleurisy with effusion, acute cardiac accident (dilatation, coronary occlusion, etc.). The diagnosis of the condition is not difficult if the atelectasis is extensive; if partial only, its recognition is not easy. It should always be thought of in the examination of patients with pulmonary complications in diphtheria and following upper abdominal operation or tracheotomy. In cases of massive pulmonary atelectasis with no obvious cause, the possible obstruction of the bronchus by a nonopaque foreign body or by an endobronchial neoplasm should be investigated by a bronchoscopic examination. If the examination reveals no endobronchial obstruction, but the existence of a complete or partial stenosis, compression of the bronchus by neoplasm, enlarged lymph nodes, aneurysm or peribronchial fibrosis should be suspected. Early recognition of the condition is important, because in many cases its treatment at that time is simple and successful. In postoperative massive atelectasis, the simple manoeuvre of rolling the patient on his unaffected side is usually effective. In late postoperative cases and in all cases of foreign bodies, bronchoscopic aspiration or extraction of the occluding substance is most effective in relieving the condition and preventing complicating pneumonia. Pulmonary atelectasis of the more circumscribed variety is also of great clinical significance. It is of frequent occurrence as a postoperative complication, and it is an important factor in pulmonary pathological processes associated with extensive fibrosis, and with pulmonary neoplasm. Its recognition and proper evaluation will solve many puzzling situations in the study of pulmonary cases.—*Massive Pulmonary Atelectasis (Collapse), H. Hennell, Arch. Int. Med., October, 1929, xliv, 604.—(W. I. W.)*

Massive Collapse of Lung.—A case is reported of recurrent massive collapse due to an intrabronchial tumor. Three successive collapses occurred. The third collapse lasted six months until the tumor was removed by bronchoscopy; the lung then expanded.—*Recurrent Massive Collapse of the Lung Due to a Benign Intrabronchial Tumor, H. E. Ashbury, Am. J. Roentgenol. & Rad. Ther., May, 1929, lxi, 452.—(W. I. W.)*

Postoperative Massive Collapse and Pneumonia.—Experimental and clinical study has convinced the author that postoperative atelectasis and postoperative pneumonia represent two phases of the same morbid condition, the differences being only in degree and depending on the type and virulence of their most frequent causative organism, the pneumococcus. There is only one determining cause of atelectasis, and that is bronchial obstruction, which must be complete. Postoperative immobilization of the thoracic cavity by pain, impairment of cough and respiratory movement by narcotics, are predisposing factors. A stasis of bronchial secretion follows, producing an irritation of the mucosa, which responds by more secretion. A bronchiolitis occurs, but usually clears up as soon as the lung regains its means of defense. But, favored by this bronchitis, pneumococcus type IV, a frequent inhabitant of the upper respiratory tract, can invade the lower airways (in every case of atelectasis studied bacteriologically this organism was found); pneumococcic bronchitis results, with a viscid exudate, rich in fibrin. If the complication remains in the stage of bronchitis, it clears up in 24 to 48 hours, but if a bronchial obstruction occurs the evolution of the pathological condition depends on the virulence of the pneumococcus and the other microbes present in the occluding mucus. If the virulence is low, the exudate will be poor in fibrin, toxic symptoms absent, and a simple obstructive atelectasis will follow by absorption of the alveolar air. This may be lobar or lobular according to the size of the obstructed bronchus, and it will appear within the first 24 or 48 hours after operation. If the obstruction is expelled early by

coughing, rapid aeration of the lung will occur, with disappearance of pain, dyspnoea, cyanosis and fever. If the virulence of the pneumococcus is higher, the exudate will be more viscid and less easily expelled, the toxic symptoms marked, and a pneumococcic cellulitis follows and gives a postoperative pneumonia, varying in extent according to the size of the obstructed bronchus. In atelectasis a number of bronchi may be liberated while others remain obstructed. In this way postoperative pneumonia may follow atelectasis, or following pneumonia another bronchus may become occluded, resulting in complicating atelectasis. As a further proof of the similarity of the two conditions, injection of india ink into the lung capillaries of living animals with atelectasis and pneumococcic pneumonia, revealed exactly the same circulatory disturbances in the two diseases. Furthermore, in producing experimental pneumonia in dogs, the same clinical signs were obtained as in massive atelectasis, and it is impossible in roentgenographs to distinguish between the two. The elevation of the diaphragm and the cardiac and mediastinal displacement are due to atelectatic shrinkage in both diseases, the difference in the degree of shrinkage being due to the amount of exudate in the alveoli. If pyogenic microbes or anaerobes are present, suppurative pneumonitis, abscess or even gangrene may follow.—*Postoperative Apneumatosis (Atelectasis) and Postoperative Pneumonia: Experimental Evidence, P. N. Coryllos, J. Am. M. Ass., July 13, 1929, xciii, 98.*—(*G. L. L.*)

X-Ray Features of Massive Collapse.—The degree of density depends on the completeness of the collapse and the presence or absence of "drowning." The involved area is more dense than the surrounding lung; the heart and mediastinal contents are usually displaced toward the affected side; the diaphragm is high and, in early stages, there is absence of respiratory excursion; the intercostal spaces are normal, but the costophrenic sinus is usually not obliterated. The lower margin is likely to be sharply defined, the upper rather mottled and indistinct, if only one lobe is involved, and if the collapse is in the upper lobe the cardiac displacement is less marked. The high fixed position of the diaphragm is a fairly constant finding, and helps to differentiate postoperative collapse from collapse due to foreign bodies, in which there is usually some respiratory movement present. When there is much fluid in the air-passages the shadows are more dense, the diaphragm may be obliterated and cardiac displacement may be considerably less. Delay or failure to expand may result in a chronic condition with a characteristic roentgen appearance, especially if in a lower lobe There is usually complete disappearance of air from the affected lobe; the bronchi are dilated, and the patient may have symptoms resembling bronchiectasis or lung abscess. A triangular area of dulness is seen between the diaphragm, the heart and the normal lobes, the margins being sharply defined and the shadow quite dense. The diaphragm is usually high, and movement is limited. Points of differentiation from lung abscess or bronchiectasis are the triangular or tongue-like shape of the shadow, which has an even density without mottling or cavity-formation, the sharply defined margins without inflammatory reaction around them, and the location of the shadow, usually between the heart and diaphragm. In postoperative pneumonia or infarction, cardiac and mediastinal displacement is absent or slight; the diaphragm is rarely more than moderately elevated; there is usually some respiratory excursion; and dull patches in the opposite lung are not infrequent. A marked change, often of diagnostic value, in postoperative collapse, may take place if the patient is allowed to cough or change position.—*Roentgen Observations in Massive Atelectasis and Postoperative Pneumonia, G. W. Holmes, J. Am. M. Ass., July 13, 1929, xciii, 100.*—(*G. L. L.*)

Treatment of Postoperative Massive Collapse.—A comparative study was made of two series of postoperative cases, the first series comprising 2,000 cases in which operation was done without hyperventilation with carbon dioxide at the close. Of this series, 12 patients developed massive atelectasis with cardiac displacement, and the condition of several others was suggestive of atelectasis. This incidence of 0.6 per cent is low for any series of similar cases, reports running as high as 1.5 per cent. The second series comprised 2,850 postoperative cases. Among them 7 cases of atelectasis occurred, or 0.25 per cent; 15 per cent of the series did not receive hyperventilation after operation, and in this group four of the instances of atelectasis occurred. Only three patients developed massive collapse after receiving hyperventilation. Apparently then, the incidence of this complication in the hyperventilated cases was less than one-fourth of that in the first series. Postural treatment is also of great importance in postoperative cases, taking care that the patient does not remain constantly in one position. It was observed that the dependent lung was always the lung affected. Fowler's position is apparently a satisfactory posture. No patients in the series so treated have had any

important symptoms of massive atelectasis for more than 24 to 48 hours.—*Massive Atelectasis and Postoperative Pneumonia: Prophylaxis and Treatment, W. J. M. Scott, J. Am. M. Ass., July 13, 1929, xciii, 101.*—(*G. L. L.*)

Size of Consolidated Lung in Lobar Pneumonia.—The size of the affected lobes in lobar pneumonia, contrary to the generally accepted opinion, is smaller than that of the healthy lobes. The enlargement of the consolidated lung is only apparent and is due to the collapse of the healthy lung when the thoracic cavity is opened. In order to appreciate the true sizes of the consolidated and healthy lobes, it is necessary to clamp the trachea and then to open the chest with only the minimum manipulation of the healthy lobes. The decreased size of the pneumonic lobe, as shown by Roentgen-ray and postmortem studies, points to a similar pathogenesis in pneumonia and atelectasis. The above points definitely proven for the dog need further confirmation for the human being.—*The Size of the Consolidated Lung in Lobar Pneumonia, P. N. Corylios and G. L. Birnbaum, Am. J. M. Sc., July 1, 1929, clxxviii, 15.*—(*W. I. W.*)

Bronchoscopic Findings in Lobar Pneumonia.—Nine cases of bronchopneumonia which were bronchoscoped are reported. Two facts have been proved: the occlusion to the air of the bronchus corresponding to the consolidated area in human lobar pneumonia and the innocuousness of a correctly performed bronchoscopy on patients with pneumonia. This preliminary note has, as its object, only the presentation of the pathological findings, which seem to support the experimental facts upon which the theory was based that lobar pneumonia starts as a pneumococcic atelectasis.—*Bronchoscopic Findings in Lobar Pneumonia, N. Corylios, Am. J. M. Sc., July 1, 1929, clxxviii, 8.*—(*W. I. W.*)

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